Enablers for a New Energy Future

Emerging Technology
- Artificial Intelligence
- Distributed Ledger Technology
- Sensors & IOT

Energy Developments
- Distributed Energy Resources
- Smart Grid & AMI
- Batteries & Flexible Loads

Market Pressure
- Climate Change
- Customer Choice
GridChain Labs

Exploring how blockchain can enable efficiencies and new business models for Exelon, our customers & the energy industry

**Technology & Business Model Exploration**
Validate technology & business model hypotheses beyond the energy industry

**Existing Energy Market and Process Applications**
Explore the opportunities in Exelon’s existing markets for efficiency and growth

**Explore New Market Paradigms**
Explore how blockchain technology can be a disrupter or enabler to energy markets

**Inform Regulatory Agenda**
Help shape legislation to benefit and protect our customers
Clean Energy Attributes & Tokens

Purchase and contribute to the development of clean & renewable energy

Energy & Attribute tokens are created in real time

I want the cheapest in-state zero carbon energy to match my usage

US: Turns operational data into a real-time digital representation of each unit produced

Europe: Renewable energy project development purchasing market

Europe: Local renewable trading via “Jouliette” token

Global platform for peer-to-peer carbon trading

Global platform for peer-to-peer carbon trading

Cryptocurrency that allows everyone to participate in the fight against Climate Change

Cryptocurrency to encourage solar energy generation for commercial solar producers and individuals
Why Blockchain?

Key question – Is blockchain a fit for this process?

Key attributes of blockchain use cases

- Are there multiple parties in the eco-system?
- Could the eco-system benefit from improved transparency?
- Is it critical to have a tamper-proof permanent record of transactions?
- Would the use case address the ownership or management of a finite resource?
- Do parties rely upon intermediaries to gain trust – to provide assurance or validate data?
Clean Energy Token Demonstration

Enable greater customer use of EFECs (emission free energy certificates) through a more efficient tracking and transacting as well as increased optionality...

**GOALS:**
- Demonstrate the time & cost benefits of blockchain-based EFEC processing
- Demonstrate how blockchain can enable greater customer choice
- Discover technical, process and compliance challenges associated with blockchain efforts
Current Process

- Complex and time consuming
  - ~100 steps from Generation to Customer.
  - Mwh and monthly data
  - From generation of Mwh to the creation of the attribute could be over 30 days.
Customer Research

Customers are, or envision, reporting environmental data more frequently than on an annual basis.

Customers use manual and spreadsheet dependent processes to aggregate and report on environmental data.

Customers are primarily focused on the cost of the energy procured rather than on the related environmental considerations.

Customers desire, or envision the ability align their load and environmental attributes on an hourly basis.
Customer Agreements Dashboard screen

Displays the information for a given customer, including their accumulated EFECs, retired EFECs, monthly consumption, and a list of all agreements associated with that customer.

Contract address can be clicked on to see the EFECs retired for that particular agreement.
Retired EFEC Tokens screen

- This screen displays all EFECs retired for a particular customer.
- Specific Certificates and all associated Meta Attributes of the asset.
Legal Highlights: Clean Energy Tokenization

Regulatory Legal Issues:

• Adoption by ISO/RTOs and replacement of centralized entities
  • If a blockchain application were to replace existing systems like PJM GATS and WREGIS, corresponding rule changes may be required.

• Regulation of Tokens
  • SEC: Tokens are securities subject to US securities laws.
  • CFTC: Tokens are commodities subject to CFTC regulation.
  • US Treasury (FinCEN): Issuers of tokens are money services businesses subject to regulation.
  • IRS: In 2014, IRS issued a notice clarifying that cryptocurrency is treated as property, not currency, for tax purposes, and accordingly transactions using cryptocurrency are taxed like purchases or sales of property. Could be applied to tokens.

Transactional Legal Issues:

• Token value and fiat currency
  • How are tokens valued and exchanged for fiat currency?
Thank you.

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